SRNL
Savannah River National Laboratory
factsheets

CORE COMPETENCY

Engineered Specialty Systems

With expertise in remote visual inspections and surveillance, Cassy Robinson provides technical support for SRS and off-site customers, including the Departments of Homeland Security, Justice, and Defense. After the September 11, 2001 terrorist attacks in New York, Cassy supported search and rescue teams with on-site fabrication of custom-made search tools. She has also coordinated a national effort to identify technology needs related to Urban Search and Rescue.

Overview

SRNL has long been a leading innovator in developing engineered systems to provide practical solutions to complex, real-world problems. Technical staffs from a variety of disciplines work together to integrate commercial off-the-shelf technology with in-house designs to develop cost-effective, field-deployable solutions. Technologies and systems originally developed for the historical nuclear production and materials handling processes at SRS are being used to support customers across DOE as well as other government agencies. This core competency is essential to ensuring the highest levels of safety and human protection and lowest risks to the environment.

Remote and Specialty Systems

SRNL expertise in remote and specialty systems spans the entire engineered systems cycle — design, development, fabrication, testing, and even assistance in the installation and field operation of unique equipment systems. SRNL is highly experienced in systems required for use in radioactive, hazardous, or inaccessible environments. SRNL specifically designs products for each application and has used its unique capabilities for such applications as:

- Special instrumentation for radioactive operations including gloveboxes and high-level waste tanks
- Unique visual inspection and surveillance equipment
- Manipulator-based systems and manipulator end effector tooling needed to perform remote operations in hazardous environments
- Mobile, wireless and tether teleoperated robots to perform remote operations and deliver sensors into hazardous environments
- Multiple-sized pipe and wall crawlers

Engineering Development

SRNL designs and builds custom experimental facilities using state-of-the-art facilities of the Engineering Development Laboratory to provide a unique core capability to meet customer needs. These experimental constructs build on our key applied technologies in engineering modeling and simulation, radioactive materials handling, process engineering development, and pilot testing.

Engineering Development Laboratory

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Engineered Speciality Systems

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SRNL responded to the World Trade Center terrorist attack recovery effort, co-locating with search and recovery personnel to provide custom-made search tools.

Rapid Response Systems Development and Integration

SRNL serves as a rapid responder to emergent process issues, and its trouble-shooting experts and tooling enable quick recovery to operational status. Technical staff from mechanical, electronic, robotic, and computer disciplines, together with designers, machinists, fabricators, and technicians, adapt and integrate commercially available components with in-house designs to meet the needs of SRS, DOE, and other government agency customers.

SRNL personnel and technology have been deployed in search and rescue operations for other government agencies. Using equipment originally designed to look into nuclear facilities and components, personnel are able to see and hear in confined spaces that are too small or too dangerous for humans to enter. Special equipment such as infrared cameras, microcameras, microphones, robotic crawlers, fiber-optic cameras, and borescopes have been applied to these tasks.

Video and Optical Viewing Systems

Visual inspection of inaccessible or hazardous environments is often needed to assess equipment conditions or aid in remote operations. Systems developed at SRNL include:

- High-temperature camera systems
- Waste tank viewing systems
- Large-scale audio and video facility surveillance systems
- Small-scale, low-cost disposable camera inspection systems

Packaging Technology

SRNL has extensive experience in hazardous radioactive materials packaging design, evaluation, and regulatory certification procedures that support the requirements of DOE, the Department of Transportation, the U.S. Nuclear Regulatory Commission, and the International Atomic Energy Agency. Performance requirements from federal law governing the transportation of significant quantities of radioactive material are rigorous. SRNL employs expertise in the areas of structural integrity, thermodynamics, criticality control, radiation shielding, joining technology, and non-destructive examination to certify the transportation packaging for radioactive materials. SRNL's work on issues such as gas generation during shipping/storage, compatibility of containment materials, and methods for long-term monitoring have resulted in the development of new packaging designs for the transportation and storage of radioactive materials.

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